

I inserted a qualifying footnote. What more could I have done?

(10). At the beginning of his article Mr. Hedley alludes to MS. names and imperfect diagnoses. It seems almost superfluous to state that there are no MS. names in my paper. The generic diagnoses are purposely short; but the species in the new genera and subgenera are elsewhere described in detail, with the exception of *Neojanella dubia*, which is described on p. 217. *Pseudaneitea* spp. have been described and their anatomy figured by Simroth. *Pseudostenia* has similarly been fully described and figured by Golwin-Austen. *Imerinia* has its type in specimens which I consider to be identical with *Veronicella Grandidieri*, C. & F., already described. *Aneitella* has been described and figured by Mr. E. A. Smith; the anatomy of this and of *Neojanella* remains unknown because the British-Museum types must not be cut up. There is no other generic or subgeneric name in my paper that has not been used and characterized before.

Now I think I have shown that on every single point mentioned, Mr. Hedley's criticism is without sufficient reason. Nobody appreciates more than the present writer the labours of students like Mr. Hedley in special faunæ; but is it fair that they should grumble at others, who, with less material, hesitate to assert what they cannot know with certainty?

Kingston, Jamaica,
Feb. 19, 1892.

LIV.—*On the Scale-like and Flattened Hairs of certain Lepidopterous Larvæ.* By A. S. PACKARD.

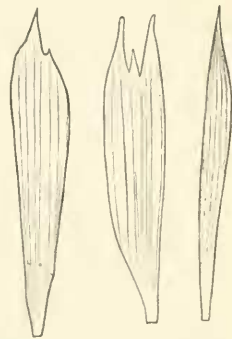
THE late Dr. T. W. Harris* described an *Acronycta*-larva, which he called *Acronycta americana*, as "beset with a few long black bristles dilated at the end," and added, "the long, black, spear-headed hairs grow from the skin and not from warts." The same larva was also figured on p. 305 of my 'Guide to the Study of Insects' (fig. 236). Mr. A. G. Butler†

* 'Entomological Correspondence of T. W. Harris,' edited by S. H. Scudder. Boston, 1862.

† "On the Natural Affinities of the Lepidoptera hitherto referred to the Genus *Acronycta* of Authors," Trans. Ent. Soc. Lond., Dec. 1879, p. 313.

refers to the larva of *Acronycta alni* as "much resembling both in colour and in its clavate hairs the larva of *Tinolius*," the latter being figured on pl. xi.; the large, strong, clavate hairs of this form, *Tinolius eburneigutta*, Walker, which is a semilooper, and from its black colour a very conspicuous animal, are represented as being from one fourth to one third as long as the body and are situated on the first two or three segments of the abdomen, this being the most prominent part, forming the loop when the creature is in motion. These are the only cases known to me of the occurrence of flattened hairs, with the exception of the case described by Burmeister and quoted below.

Scale-like Setæ.—In examining the median dorsal tufts on the second and third thoracic segments of the European *Gastropacha quercifolia* I found that they are composed of broad lanceolate-oval scales*, which are opaque and dark steel-purple in colour, with the surface quite regularly striated, though not invariably so, while the striæ do not appear to extend to either end. They vary in shape and in size, some being narrow and with a simple point at the distal end, while the majority are variously notched or toothed. They thus appear to be true scales, like those on the wings of adult Lepidoptera.



Scales from the dorsal thoracic tufts of *Gastropacha quercifolia*.

In *Gastropacha americana* the scales forming the dorsal tufts, both on the two hinder thoracic segments and on the eighth abdominal one, are very different from those of the European species; they are dark and opaque, but are long, narrow, and flat, very gradually increasing in width to the end, which has a single notch. From this notch an impressed line or stria extends along the middle of the scale for some distance.

Setæ flattened at the end.—In *Gastropacha quercifolia* the lateral tufts along the body each contain a few long hairs with flattened ends, varying in shape from oval to triangular, with the ends often very broad and ragged, bearing from one to

* These scales were briefly referred to in my article entitled "Hints on the Evolution of the Bristles, Spines, and Tubercles of certain Caterpillars," Proc. Bost. Soc. Nat. Hist. xxiv. p. 512, 189 (1890).

four very irregular teeth. No striæ are perceptible, and the hairs throughout are pale, colourless, and transparent.

On examining the lateral tufts of *Gastropacha americana* I found some similar very long hairs with the ends flattened and of extraordinary form. These hairs usually project beyond the simple hairs; some of them end in regular lanceolate-oval shapes with the point much attenuated, others are broader, while some are oval and very broad at the truncated end, which terminates in a fine attenuated point, at the base of which are usually three attenuated teeth. They are similar in shape to those of *Gastropacha quercifolia*.

On turning over the beautiful plates of Burmeister's 'Atlas of the Lepidoptera of the Argentine Republic' I found that the author represents on pl. xxii. fig. 9 the similar long hairs of *Clisiocampa proxima*. They are much more regular than any I have seen, and are much flattened and expanded at the ends, with from three to five long slender teeth. They are also represented as striated longitudinally, with either beads or clear spots in the expanded portion. These hairs are visible to the naked eye. Burmeister remarks (p. 52) that Stoll has figured (Suppl. de Cramer, pl. xix. fig. 5) a similar larva with the same kind of hairs, à *palmette terminale*, situated on the first and last segments of the body. He names it *Bombyx ephomia* (pl. xxxv. fig. 6, of the same volume). Walker refers this species with doubt to the genus *Oxytenis*. Burmeister adds: "Some other species of the genus *Clisiocampa* have the same kind of hairs placed at each end of the body."

I have been unable to discover these flattened hairs in *Clisiocampa americana* or in *C. neustria* of Europe. In *C. sylvatica* the hairs on the lateral thoracic tubercles are tapering and finely barbed, with scattered, slender, spike-like, smooth, simple setæ. Perhaps the latter are the homologues of the flattened setæ. In *Heteropacha Rileyana* of the central United States there are no dorsal tufts, and consequently no dorsal scales like those of its ally *Gastropacha*; but certain of the hairs in the lateral tufts are flattened at the end, which is very long and slender and lanceolate-oval, with the tip much attenuated*.

In the Noctuidæ these hairs with flattened ends probably occur in nearly all the hairy and pencilled species. In the

* In *Tolyte velleda* there are no such scales or hairs with flattened ends as in *Gastropacha*; those on the dorsal tubercles of the thoracic and eighth abdominal segments being simple, tapering, with large, scattering, spike-like, dark, opaque setæ, these latter being perhaps the homologues of the dark scales of *Gastropacha*.

larva of *Acronycta hastulifera*, A. & S., many of the barbed hairs forming the black pencils are flattened at the end and black, but not striated.

These specialized and highly differentiated dark scale-like setæ appear to be of use in rendering the dorsal tufts more conspicuous, the caterpillars being very hairy, and thus probably inedible by birds. It should be observed that the larva of *Gastropacha americana*, in which the dorsal tubercles and the scales are much smaller than in the European *G. quercifolia*, is rendered at least equally conspicuous by the two transverse bright scarlet bands disclosed behind the second and third thoracic segments when the insect is creeping. These appear to be entirely wanting in the European species.

Finally, the occurrence of these scales, so much like those of adult Lepidoptera, is an interesting example of the acceleration of development of the setæ in the larval stage, and it is not improbable that in the ancestors of certain of the Lasiocampidæ they were characters acquired during the later stages of their larval lifetime.

Providence, R. I., U. S. A.

LV — *On the Ophideres princeps of Guenée and its utter dissimilarity in Structure and Pattern from the Ophideres princeps of Boisduval.* By ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

IN the 'Voyage of the 'Astrolabe'' (Lépidoptères, p. 245) M. Boisduval described a moth from Dorey, New Guinea, under the name of *Ophideres princeps*; he characterized it as allied to *O. materna*, Cramer, and as having "the front wings blackish, slightly clouded, dusted with black and a little varied with greenish, with four white spots, grouped in pairs; the lower wings yellow with a kidney-shaped patch and a black border, and the fringe intersected with whitish." This is probably one of the innumerable varieties of the wide-ranging *O. fullonica*.

In the third volume of his 'Noctuélites' M. Guenée describes and figures a West-African species (with M. Boisduval's locality) as *O. princeps*—evidently without taking the trouble to look up the description in the 'Voyage of the 'Astrolabe,' with which the African species hardly corresponds in a single particular, inasmuch as the front wings,